portion of central Texas, and the extreme southwestern portion of the State, while over the other portions there was a general excess, ranging from 1.00 to 15.63, with the greatest along the immediate east coast. The rainfall for the month was not very well distributed. The greatest monthly amount, 18.74, occurred at Galveston, and the least, 0.93, at Santa Gertrudes Ranch.—*I. M. Cline.*

Utah.—The mean temperature was 72.6°, or 0.1° above normal; the highest was 111°, at Fillmore on the 30th, at Giles and St. George on the 11th, and Hite on the 11th and 12th; the lowest was 30°, at Henefer on the 4th and 20th. The average precipitation was 0.09, or 0.56 below normal; the greatest monthly amount, 0.95, occurred at Loa; none fell at Millville and 9 additional stations, while 11 stations reported but a trace.—*L. H. Murdoch.*

Virginia.—The mean temperature was 77.8°, or 1.8° above normal; the highest was 105°, at Farmville on the 19th, and the lowest, 41°, at Burkes Garden on the 10th and 14th. The average precipitation was 3.53, or 1.18 below normal; the greatest monthly amount, 6.51, occurred at Norfolk and Sunbeam, and the least, 0.65, at Rockymount.—*E. A. Evans.*

Washington.—The mean temperature was 65.5°, or 1.1° above normal; the highest was 116°, at Lind on the 31st, and the lowest, 34°, at Wilbur on the 5th. The average precipitation was 0 68, or 0.06 above normal; the greatest monthly amount, 2.90, occurred at Clearwater, while none fell at Mottingers Ranch, Waterville, and Wenatchee.—*G. N. Salisbury.*

West Virginia.—The mean temperature was 74.7°, or 1.2° above normal; the highest was 104°, at Martinsburg on the 18th, and the lowest, 41°, at Philippi on the 10th. The average precipitation was 4.38, or 0.35 below normal; the greatest monthly amount, 7.88, occurred at Princeton, and the least, 1.72, at Beckley.—*E. C. Vose.*

Wisconsin.—The mean temperature was 68.6°, or 1.7° below normal; the highest was 100°, at Medford on the 3d, and the lowest, 38°, at the the same station on the 12th. The average precipitation was 7.23, or 3.81 above normal; the greatest monthly amount, 13.35, occurred at Prentice, and the least, 4.20, at Bayfield.—*W. M. Wilson.*

Wyoming.—The mean temperature was 64.9°, or 1.5° below normal; the highest was 116°, at Bittercreek on the 12th, and the lowest, 20°, at Daniel on the 23d. The average precipitation was 1.22, or 0.07 above normal; the greatest monthly amount, 3.69, occurred at Fort Laramie, and the least, 0.06, at Basin.—*W. S. Palmer.*

SPECIAL CONTRIBUTIONS.

RECENT PAPERS BEARING ON METEOROLOGY.

W. F. R. PHILLIPS, in charge of Library, etc.

The subjoined list of titles has been selected from the contents of the periodicals and serials recently received in the library of the Weather Bureau. The titles selected are of papers or other communications bearing on meteorology or cognate branches of science. This is not a complete index of the meteorological contents of all the journals from which it has been compiled; it shows only the articles that appear to the compiler likely to be of particular interest in connection with the work of the Weather Bureau:

Symons's Monthly Meteorological Magazine. London. Vol. 35.
- **Archibald, D.** Indian Famine-causing Droughts and their Prevision. (Concluded.) P. 81.
- **Dines, W. H.** Meteorological Extremes. III. Wind Force. P. 85.

Annalen der Physik. Leipzig. 4te Folge. Band 2.
- **Elster, J. und Geitel, H.** Ueber Elektricitätszerstreuung in der Luft. P. 425.
- **Toepler, M.** Ueber die Abhängigkeit des Charakters elektrischer Dauerentladung in atmosphärischer Luft von der dem Entladungsraume continuirlich zugeführten Elektricitätsmenge, nebst einem Anhange zur Kenntnis der Kugelblitz. P. 560.

Archives des Sciences Physiques et Naturelles. Genève. 4 Période. Tome 10.
- **Richter, E.** Les variations périodiques des glaciers. 5me rapport, 1899, rédigé au nom de la Commission internationale des glaciers. P. 26.

Ciel et Terre. Bruxelles.
- **Ridder, P. J. de.** Du retour probable des périodes orageuses. P. 222.
- —— Variations du climat aux époques géologiques. P. 226.

Comptes Rendus. Paris. Tome 131.
- **Marey.** Des mouvements de l'air lorsqu'il rencontre des surfaces de différentes formes. P. 160.
- **Janssen, J.** Sur l'Observatoire du Mont Etna. P. 317.

Nature. London. Vol. 62.
- **Roberts, J. E.** Remarkable Hailstorm. P. 341.
- **Townsend, J. S.** Conductivity produced in gases by the motion of negatively charged Ions. P. 340.
- **Aitken, John.** Atmospheric Electricity. P. 366.

Proceedings of the Royal Society. London. Vol. 66.
- **Dickson, H. N.** Circulation of the Surface Waters of the North Atlantic Ocean. P. 484.

Quarterly Journal of the Royal Meteorological Society. London. Vol. 26.
- **Curtis, R. H.** Diurnal Variation of the Barometer in the British Isles. P. 1.
- **Latham, Baldwin.** Climatic Conditions necessary for the propagation and spread of the Plague. P. 37.
- **Bayard, F. C.** New Reduction of the Meteorological Observations at Greenwich. P. 101.
- **Mawley, E.** Report on the Phenological Observations for 1899. P. 113.
- **Scott, R. H.** Results of Percolation Experiments at Rothamsted, September, 1870, to August, 1899. P. 139.

Scottish Geographical Magazine. Edinburg. Vol. 16.
- **Ormond, R. T.** Temperature Observations in Somaliland and Abyssinia. P. 490.
- —— Temperature of the Free Atmosphere. P. 493.

Das Wetter. Berlin. 17 *Jahrg.*
- **Assmann, R.** Aus dem Aeronautischen Observatorium des kongl. Meteorologischen Institutes. P. 145.

Zeitschrift für Luftschiffahrt und Physik der Atmosphäre. Berlin. 19 *Jahrg.*
- **Wellner, G.** Die Flugmaschinensysteme. (Schluss.) P. 101.
- **Jacob, E.** Die Rolle der Gravitation in der Aviatik. (Schluss.) P. 111.

Meteorologische Zeitschrift. Wien. Band 17.
- **Meinardus, W.** Eine einfache Methode zur Berechnung Klimatologischer Mittelwerthe von Flächen. P. 241.
- **Fischer, K. T.** Ein neues Barometer. P. 257.
- —— G. J. Symons. P. 275.
- **Moller, M.** Der räumliche Gradient. P. 275.
- **Bornstein, R.** Eine Beziehung zwischen Luftdruckvertheilung und Monddeklination. P. 276.
- **Baschin, O.** Die ersten Nordlichtphotographien, aufgenommen in Bossekop (Lappland). P. 278.
- **Dorn.** Ueber eine mögliche Wirkung des Hagelschiessens. P. 280.
- **Hann, J.** Der tägliche Gang der Bodentemperatur zu Tiflis. P. 281.
- **Less, E.** Berichtigung. P. 282.
- **Polis, P.** Temperaturumkehr und Föhnwirkung im Hohen Venn. P. 282.
- **Kremser, V.** Klimatische Verhältnisse des Memel-, Pregel- und Weichsel-Gebietes. P. 289.
- **Ebert, H. and Hoffmann, B.** Elektrisirung durch Eisreibung. P. 317.
- **Bergholz.** Beobachtungen während der Sonnenfinsterniss vom 28 Mai, 1900. P. 326.
- —— Meteorologische Beobachtungen zu Fort Simpson 1899. P. 326.
- **Prohaska.** Die jährliche und tägliche Periode der Gewitter und Hagelfälle in Steiermark und Kärnten. P. 327.
- **Prohaska, K.** Blitzschäden in Steiermark und Kärnten im Jahre 1899. P. 331.
- **Hellmann, G.** Zur Frage der gestrengen Herrenoder Eismänner. P. 333.
- —— Regenfall am Osthang der Peruanischen Anden. P. 335.
- **Wolfer, A.** Provisorische Sonnenflecken-Relativzahlen für das II Quartal 1900. P. 335.
- **Chabot, J. J. Taudin.** Die grüne Strahlung. P. 335.

MEXICAN CLIMATOLOGICAL DATA.

Through the kind cooperation of Señor Manuel E. Pastrana, Director of the Central Meteorologic-Magnetic Observatory, the monthly summaries of Mexican data are now communicated in manuscript, in advance of their publication in the Boletin Mensual. An abstract, translated into English measures, is here given, in continuation of the similar tables published in the MONTHLY WEATHER REVIEW since 1896. The barometric means have not been reduced to standard gravity, but this correction will be given at some future date when the pressures are published on our Chart IV.

Mexican data for July, 1900.

Stations.	Altitude.	Mean barometer.	Temperature. Max.	Temperature. Min.	Temperature. Mean.	Relative humidity.	Precipitation.	Prevailing direction. Wind.	Prevailing direction. Cloud.
	Feet.	*Inch.*	° *F.*	° *F.*	° *F.*	%	*Inch.*		
Durango (Seminario)	6,243	24.03	93.2	50.0	69.6	63	9.78	wsw.	e.
Leon (Guanajuato)...	5,934	24.27	87.1	55.4	69.3	68	6.79	sse.	se.
Mazatlan	25	29.84	90.7	74.8	83.5	77	10.88	nw.	ne.
Mexico (Obs. Cent.)..	7,472	23.04	81.3	51.3	62.2	71	5.79	n.	ne.
Morelia (Seminario)..	6,401	23.95	77.4	53.6	64.2	81	5.63	sw.	e.
Puebla (Col. Cat.)....	7,112	23.36	79.7	49.1	65.5	77	9.03	e.	ne.
Saltillo (Col. S. Juan).	5,399	24.77	87.8	59.0	71.6	71	5.70	n.	se.
Zacatetas	8,015	22.49	80.6	47 8	62.6	60	11.69	e.	
Zapotlan (Sem.)......	5,078	25.07	82.0	61.2	69.4	76	5.20	sse.	se.

OBSERVATIONS AT HONOLULU.

Through the kind cooperation of Mr. Curtis J. Lyons, Meteorologist to the Government Survey, the monthly report of meteorological conditions at Honolulu is now made partly in accordance with the new form, No. 1040, and the arrangement of the columns, therefore, differs from those previously published.

Meteorological observations at Honolulu, July, 1900.

The station is at 21° 18′ N., 157° 50′ W.

Hawaiian standard time is 10h 30m slow of Greenwich time. Honolulu local mean time is 10h 31m slow of Greenwich.

Pressure is corrected for temperature and reduced to sea level, and the gravity correction, —0.06, has been applied.

The average direction and force of the wind and the average cloudiness for the whole day are given unless they have varied more than usual, in which case the extremes are given. The scale of wind force is 0 to 12, or Beaufort scale. Two directions of wind, or values of wind force or amounts of cloudiness, connected by a dash, indicate change from one to the other.

The rainfall for twenty-four hours is measured at 9 a. m. local or 7:31 p. m. (not 1 p. m.), Greenwich time, on the respective dates.

The rain gage, 8 inches in diameter, is 1 foot above ground. Thermometer, 9 feet above ground. Ground is 43 feet, and the barometer 50 feet above sea level.

Date.	Pressure at sea level.	Temperature. Dry bulb.	Temperature. Wet bulb.	During twenty-four hours preceding 1 p. m., Greenwich time, or 2:29 a. m., Honolulu time. Temperature. Maximum.	Temperature. Minimum.	Means. Dew-point.	Means. Relative humidity.	Wind. Prevailing direction.	Wind. Force.	Average cloudiness.	Sea-level pressures. Maximum.	Sea-level pressures. Minimum.	Total rainfall at 9 a. m., local time.
	*	†	†			‡	‡		§				
1.....	30.00	77	69.5	85	76	.....	.....	ne.	4-5	5	30.02	29.96	0.01
2.....	30 00	76	69.5	86	76	65.7	62	ne.	4-2	5	30.04	29.97	0.03
3.....	29.97	73	69.5	85	75	66.7	66	ene.	3-1	4-8	30.01	29.96	0.13
4.....	29.97	72	69	84	71	68.5	75	ne.	3	3-8	30.01	29.94	0.07
5.....	29.98	75	69	85	75	69.5	79	ene.	3	5	30.02	29.95	0.15
6.....	29.96	74	69	85	71	67.3	69	ne.	3	6	30.02	29.94	0.08
7.....	29.98	76	69	85	70	67.3	69	ne-nne.	4	4	30.00	29.94	0.00
8.....	30.00	77	69	86	75	66.3	65	nne.	3	3	30.00	29.96	0.01
9.....	30.03	76	68	85	76	66.5	66	ene.	4	3	30.04	29.99	0.00
10.....	29.94	72	70	86	75	65.5	64	nne.	3	3-1	30.05	29.95	0.41
11.....	29.91	75	70	79	71	69.0	79	ne.	3	8-4	29.99	29.91	0.19
12.....	29.95	74	67.5	84	72	66.7	69	ne.	4	3	29.98	29.93	0.04
13.....	29.96	75	69	85	73	66.0	66	ne.	2	5	29.99	29.94	0.06
14.....	29.93	75	68.5	84	72	67.7	72	ne.	3-0	3-8	29.97	29.92	0.14
15.....	29.91	72	69	85	70	67.3	69	ne.	1	4	29.97	29.93	0.01
16.....	29.90	76	69.5	86	72	67.5	71	ne.	1	3	29.97	29.87	0.01
17.....	29.92	75	68	86	74	65.7	63	ne.	1-3	2	29.95	29.88	0.00
18.....	29.97	75	68.5	86	74	66.5	60	ne.	1-3	2	30.00	29.92	0.09
19.....	29.97	77	71	86	72	69.0	65	ne.	3	8-3	30.06	29.97	0.05
20.....	29.93	72	68	86	76	67.7	60	ne.	3	5-1	30.01	29.92	0.02
21.....	29.86	70	66	86	79	65.0	68	nne.	3-4	1	29.97	29.86	0.01
22.....	29.90	73	68.5	87	68	65.7	66	nne.	2	2	29.93	29.86	0.00
23.....	29.92	77	69	86	72	64.5	62	ne.	3	2	29.97	29.90	0.00
24.....	39.95	77	69	86	76	66.0	63	ne.	4	4	29.99	29.93	0.00
25.....	29.94	76	69.5	86	76	65.5	62	nne.	4	2	29.98	29.90	0.04
26.....	29.93	73	68.5	85	74	65.3	63	ne.	4	3	29.95	29.89	0.36
27.....	29.93	76	69.5	83	70	68.0	75	ne.	4-0	5	29.97	29.91	0.15
28.....	29.93	76	71	87	72	67.0	66	ne.	3-0	2	29.99	29.91	0.00
29.....	29.94	77	73	88	75	69.7	72	ene.	3	4-6	30.00	29.94	0.16
30.....	29.94	76	72.5	87	75	70.5	72	ne.	3	4-2	29.98	29.92	0.04
31.....	29.94	75	71	86	76	69.7	73	nne.	4	2	29.98	29.91	0.33
Sums..	......	......	......	.....	.....	.....	.....	....	.....	.....	....	.....	2.59
Means.	29.947	74.9	69.3	85.3	73.0	66.9	67.5	....	2.9	3.7	29.994	29.925	....
Departure..	—.035	......	......	.....	.....	+3.6	+0.8	....	.....	—0.3	....	.....	+0.79

Mean temperature for July, 1900 (6+2+9) ÷ 3=78.5°; normal is 77.2°. Mean pressure for July (9+3) ÷ 2 is 29.960; normal is 29.995.

* This pressure is as recorded at 1 p. m., Greenwich time. † These temperatures are observed at 6 a. m., local, or 4:31 p. m., Greenwich time. ‡ These values are the means of (6+9+2+9) ÷ 4. § Beaufort scale.

FOG STUDIES ON MOUNT TAMALPAIS.

By ALEXANDER G. MCADIE, Forecast Official.

If we lived on a planet without an atmosphere, such as our own satellite, and were suddenly carried to the earth and required to specify what, of all the wonderful things seen, most excited our interest, we would be forced, in perfect fairness, to answer "the floating reservoirs—the clouds." Because we do live on a planet that has an atmosphere, and daily see the never-ending procession of aerial forms marching across the sky we are unable to rightly marvel at the clouds, though we may rightly admire the beauty of the cloudscape. We fail to realize, too, that we are living at the bottom of a sea—a sea of air and not of water. This is a deeper sea than that of the sailing ships, and soundings exceeding 5 miles have recently been made in it. Twilight indicates a sensible atmosphere of perhaps 40 miles, and some measurements of meteoric phenomena would extend the envelope of air to 100 miles; but for all practical purposes the sea of air with which man is concerned may be considered as 5 miles deep. Even so, it is an ocean more vast than the broad Pacific, the ridged Atlantic, the Arctic, the Antarctic, and all the waters of the globe combined. At the bottom of this sea men walk about unconscious of a pressure of nearly one ton on each square foot of their bodies. This pressure is not constant but varies from hour to hour and day by day, sometimes as much as one hundred pounds. Far above move those strangely plastic water carriers, the clouds, and it may be that a longing comes for the wings of a bird that we, too, might journey in the realms of the cloud. But like Prometheus bound to his rock, man seems chained below and wears out his existence at the bottom of the sea of air. Deep sea fishes are structurally adapted to withstand the enormous pressure of the superincumbent layers of water; and man, a deep air animal, is also suited for his habitat. When he wishes to change from one level to another he can laboriously climb the side of some high mountain, realizing as he toils upward that his respiratory system is adapted to low levels. With less physical effort he can rise in an artificial way by balloons, and range through levels with pressure varying from 15 to 5 pounds per square inch. Unlike the birds, however, he can not, unassisted, sound the air. He is outclassed by the eagle. Even the lazy buzzard circling slowly across the sky, soaring without effort over hill and valley, watching with sharp eye the slow-moving animals on earth, has the advantage of man.

The sea of air has even more moods than the sea of water. In the atmosphere the great disturbances are at the bottom while the upper strata are comparatively tranquil. What is called weather is for the most part a displacement of normal strata. Deflection, dipping, or underflowing of some customary air stratum by another, means a marked change in man's environment and naturally he comments freely thereupon.

Few of us realize that the atmosphere is never absolutely at rest. On the calmest day and in the most sheltered nook the air, seemingly still, will be found on closer examination to be in motion. Difference of temperature causes convectional currents, or what we may call gross motion. There are other motions, of which the layman can know but little. The president of the British Association for the Advancement of Science stated in the presidential address for 1898 that—

> The total energy of both the translational and internal motions of the molecules locked up in quiescent air at ordinary pressure and temperature is about 140,000 foot-pounds in each cubic yard of air. Accordingly the quiet air within a room 12 feet high, 18 feet wide, and 22 feet long, contains energy enough to propel a one-horse-power engine for more than twelve hours.

As seaweeds betray the set of the ocean currents, so do